CONTENTS

Volume 11, Issue Nos. 1–12

International Journal for

NUMERICAL METHODS IN ENGINEERING

Issue No. 1, 1977

Obituary to Professor B. Fraeijs de Veubeke 2

W. E. Haisler, J. A. Stricklin and J. E. Key: Displacement Incrementation in Non-Linear Structural Analysis by the Self-Correcting Method 3

A. D. McAulay: The Finite Element Solution of Dissipative Electromagnetic Surface Waveguides 11

Pin Tong: Simplex Elements of C^0 Continuity with Varying Polynomial Degrees . 27

T-T. Feng, J. S. Arora and E. J. Haug, Jr.: Optimal Structural Design Under Dynamic Loads 39

P. Bettess: Infinite Elements 53

T. Belytschko, L. Schwer and M. J. Klein: Large Displacement, Transient Analysis of Space Frames 65

R. S. Barsoum: Triangular Quarter-Point Elements as Elastic and Perfectly-Plastic Crack Tip Elements 85

D. A. Gignac: Solution of a Complex Quadratic Eigenvalue Problem 99

I. N. Katz: Integration of Triangular Finite Elements Containing Corrective Rational Functions 107

I. Y. Bar-Itzhack: A Unidimensional Convergence Test for Matrix Iterative Processes Applied to Strapdown Navigation 115

O. C. Zienkiewicz, J. C. Heinrich, P. S. Huyakorn and A. R. Mitchell: An 'Upwind' Finite Element Scheme for Two-Dimensional Convective Transport Equation . 131

H. A. Mang and R. H. Gallagher: A Critical Assessment of the Simplified Hybrid Displacement Method 145

SHORT COMMUNICATIONS

R. Wagner: On Local Trial Functions in the Line Solution Technique of Plane Elasticity Problems 169

E. Hinton: The Flexural Analysis of Laminated Composites Using a Parabolic Isoparametric Plate Bending Element 174

H. D. Hibbitt: Some Properties of Singular Isoparametric Elements 180

G. V. Rao, K. K. Raju, N. Muthiyalu and J. Venkataramana: Least Square and Galerkin Finite Element Solution of Flow Past a Flat Plate 185

P. Townsend: Technical Note: The Application of Computers to Viscosity Measurement in Non-Newtonian Fluids 191

A. Bykat: A Note on an Element Ordering Scheme 194

R. Katnik: A Note on Moment Balance in the Isoparametric Shell Element . . . 199

T. K. Hellen: On Special Isoparametric Elements for Linear Elastic Fracture Mechanics: A discussion of papers by R. D. Henshell, K. G. Shaw and R. S. Barsoum 200

ANNOUNCEMENTS 204

CONTENTS

Issue No. 2, 1977

W. S. Blackburn and T. K. Hellen: Calculation of Stress Intensity Factors in Three Dimensions by Finite Element Methods 211

K. Brandt: Calculation of Vibration Frequencies by a Hybrid Element Method Based on a Generalized Complementary Energy Principle 231

S. B. Dong: A Block–Stodola Eigensolution Technique for Large Algebraic Systems with Non-symmetrical Matrices 247

A. Prakash: Finite Element Solution of the Non-self-adjoint Convective-Dispersion Equation 269

A. K. Noor and M. D. Mathers: Finite Element Analysis of Anisotropic Plates . . 289

S. P. Neuman and T. N. Narasimhan: Mixed Explicit-implicit Iterative Finite Element Scheme for Diffusion-type Problems: I. Theory 309

T. N. Narasimhan, S. P. Neuman and A. L. Edwards: Mixed Explicit-implicit Iterative Finite Element Scheme for Diffusion-type Problems: II. Solution Strategy and Examples 325

P. J. Harley and A. R. Mitchell: A Finite Element Collocation Method for the Exact Control of a Parabolic Problem 345

O. C. Zienkiewicz, D. W. Kelly and P. Bettess: The Coupling of the Finite Element Method and Boundary Solution Procedures 355

SHORT COMMUNICATIONS

P. Tong: A Hybrid Crack Element for Rectilinear Anisotropic Material 377

T. J. R. Hughes: A Note on the Stability of Newmark's Algorithm in Nonlinear Structural Dynamics 383

J. E. Akin: Integration Over the Unit Triangle 386

G. Lague and R. Baldur: Extended Numerical Method for Triangular Surfaces . 388

M. F. Light and A. R. Luxmoore: Application of the Front Solution to Two and Three-dimensional Elastoplastic Crack Problems 393

M. M. Cecchi and C. Lami: Automatic Generation of Stiffness Matrices for Finite Element Analysis 396

D. M. Tracey: Discussion of 'On the Use of Isoparametric Finite Elements in Linear Fracture Mechanics' by R. S. Barsoum 401

R. S. Barsoum: Author's Reply to the Discussion by Tracey 402

LETTER TO THE EDITOR 404

ANNOUNCEMENTS 406

Fuller Obituary on Professor B. Fraeijs de Veubeke 407

CONTENTS

Issue No. 3, 1977

G. Strang: A Homework Exercise in Finite Elements 411

P. Tsipouras: Compact Representation of Triangular Finite Elements for Poisson's Equation 419

A. Prosperetti: A Numerical Method for the Solution of Certain Classes of Nonlinear Volterra Integro-Differential and Integral Equations 431

M. J. O'Carroll, K. Foster and C. M. McKay: An Attenuation-Free Upwind Difference Formula for Analogue Computation of Charge Flow in Semiconductors 439

E. M. Deeley and E. E. Okon: A Numerical Method of Solving Fredholm Integral Equations Applied to Current Distribution and Inductance in Parallel Conductors 447

J. F. Ury: Numerical Fourier Analysis in the Range of Higher Frequencies 469

R. A. F. Martins and D. R. J. Owen: Structural Instability and Natural Vibration Analysis of Thin Arbitrary Shells by use of the Semiloof Element 481

D. P. Mondkar and G. H. Powell: Finite Element Analysis of Non-Linear Static and Dynamic Response 499

L. Contri and B. Schrefler: A Stability Investigation of Cable Suspended Pipelines . 521

A. J. Willmott and B. Kulakowski: Numerical Acceleration of Thermal Regenerator Simulations 533

L. Winnicki, M. Kwieciński and M. Kleiber: Numerical Limit Analysis of Perforated Plates 553

S. Usuki: The Application of a Variational Finite Element Method to Problems in Fluid Dynamics 563

B. Davies and J. A. Hendry: The Indirect Design of Fluid Channels Using a Global Variational Method with Trial Functions not Satisfying the Prescribed Boundary Conditions 579

SHORT COMMUNICATIONS

R. R. Barnhill, J. H. Brown, N. McQueen and A. R. Mitchell: Computable Finite Element Error Bounds for Poisson's Equation 593

B. Jones: A Heuristic for Root Isolation 598

LETTERS TO THE EDITOR 604

BOOK REVIEWS 605

ANNOUNCEMENT 607

CONTENTS

Issue No. 4, 1977

P. Pedersen: On Computer-aided Analytic Element Analysis and the Similarities of Tetrahedron Elements 611

L. A. Schmit, Jr. and B. Farshi: Optimum Design of Laminated Fibre Composite Plates 623

E. D. Eason and C. D. Mote, Jr.: Solution of Non-linear Boundary Value Problems by Discrete Least Squares 641

E. L. Stanton, L. M. Crain and T. F. Neu: A Parametric Cubic Modelling System for General Solids of Composite Material 653

R. C. Batra: Cold Sheet Rolling, the Thermoviscoelastic Problem, a Numerical Solution 671

D. Bushnell: A Strategy for the Solution of Problems Involving Large Deflections, Plasticity and Creep 683

C. A. Felippa: Error Analysis of Penalty Function Techniques for Constraint Definition in Linear Algebraic Systems 709

J. Radziuk: The Numerical Solution from Measurement Data of Linear Integral Equations of the First Kind 729

G. H. Meyer: An Alternating Direction Method for Multi-Dimensional Parabolic Free Surface Problems 741

SHORT COMMUNICATIONS

M. P. Rossow, A. K. Mehta and G. Petruska: First Cesaro Sums for High Order Finite Elements near Singularities 753

R. D. Cook and V. Tantichaiboriboon: Application of Optimization and Finite Element Methods to a Cracking Problem in Timber 756

G. S. Whiston: On an Eigensystem Routine due to K. K. Gupta 759

R. J. Collins: A Modified Prefrontal Routine 765

ANNOUNCEMENTS 766

CALL FOR PAPERS 768

BOOK REVIEW 768

CONTENTS

Issue No. 5, 1977

Erratum 770

Z. Aktas and H. J. Stetter: A Classification and Survey of Numerical Methods for Boundary Value Problems in Ordinary Differential Equations 771

P. Hillion: Numerical Integration on a Triangle 797

N. Q. Son: On the Elastic Plastic Initial-boundary Value Problem and its Numerical Integration 817

R. F. Care, R. E. Lawther and A. P. Kabaila: Finite Element Post-buckling Analysis for Frames 833

L. A. Lopez: FINITE: An Approach to Structural Mechanics Systems 851

M. K. Kaul: Determination of Eigenvalues of Large Structural Systems in an Arbitrarily Specified Range 867

I. Kalev and J. Gluck: Elasto-Plastic Finite Element Analysis 875

I. J. Jordaan and M. M. A. Khalifa: Creep Analysis of Reinforced and Prestressed Concrete Structures under Non-uniform Temperature Distributions, using Elastic Solutions 883

SHORT COMMUNICATIONS

C. H. Cooke: A Block Iterative **LU** Solver for Weakly Coupled Linear Systems . 897

A. Cichocki and S. Osowski: Analysis of Active Ladder Network by using Coates Flow Graphs and Continuants 900

E. Hinton and O. C. Zienkiewicz: A Note on a Simple Thick Finite Strip 905

E. N. Bromhead: Discussion of 'Finite Element Residual Schemes for Unconfined Flow' by Chandrakant S. Desai 908

C. S. Desai: Author's Reply to the Discussion by Bromhead 910

ANNOUNCEMENTS 911

BOOK REVIEW 912

CONTENTS

Issue No. 6, 1977

W. R. Case Jr. and W. H. Walston Jr.: A Finite Element Technique for Non-deterministic Thermal Deformation Analyses Including Temperature Dependent Material Properties 915

L. C. Wellford Jr. and R. M. Ayer: A Finite Element Free Boundary Formulation for the Problem of Multiphase Heat Conduction 933

E. O. Frind: An Isoparametric Hermitian Element for the Solution of Field Problems 945

P. M. Li, K. S. Hindi and A. Brameller: Security Assessment of Gas Networks . . 963

J. F. Bourgat and G. Duvaut: Numerical Analysis of Flow with or without Wake Past a Symmetric Two-Dimensional Profile without Incidence 975

B. A. H. Abbas and J. Thomas: Static Stability of Plates Using Fully Conforming Element 995

D. Dowson, G. N. Blount and J. N. Ashton: Optimization Methods Applied to Hydrodynamic Bearing Design 1005

R. D. Cook: Ways to Improve the Bending Response of Finite Elements 1029

SHORT COMMUNICATIONS

J. A. Stricklin, W. S. Ho, E. Q. Richardson and W. E. Haisler: On Isoparametric *vs* Linear Strain Triangular Elements 1041

W. A. Bradley: An Alternate Finite Difference Operator for Plates of Variable Stiffness 1044

M. D. Deshpande and D. P. Giddens: Direct Solution of Two Linear Systems of Equations Forming Coupled Tridiagonal-Type Matrices 1049

J. F. Cochet and G. S. Dhatt: A Modification of the Alpha Constant Technique . 1053

P. Hood: Note on Frontal Solution Program for Unsymmetric Matrices 1055

CALL FOR PAPERS 1056

Issue No. 7, 1977

Erratum 1058

W. L. Wood: Control of Crank–Nicolson Noise in the Numerical Solution of the Heat Conduction Equation 1059

F. W. Williams and W. P. Howson: Compact Computation of Natural Frequencies and Buckling Loads for Plane Frames 1067

R. J. Melosh and P. V. Marcal: An Energy Basis for Mesh Refinement of Structural Continua 1083

M. Kawahara: Periodic Galerkin Finite Element Method of Unsteady Periodic Flow of Viscous Fluid 1093

G. Yagawa, M. Miyazaki and Y. Ando: Superposition Method of Finite Element and Analytical Solutions for Transient Creep Analysis 1107

P. Friedmann, C. E. Hammond and T-H. Woo: Efficient Numerical Treatment of Periodic Systems with Application to Stability Problems 1117

I. Kaneko: A Mathematical Programming Method for the Inelastic Analysis of Reinforced Concrete Frames 1137

D. K. Gartling, R. E. Nickell and R. I. Tanner: A Finite Element Convergence Study for Accelerating Flow Problems 1155

R. W. Lewis, M. Strada and G. Comini: Drying-induced Stresses in Porous Bodies 1175

SHORT COMMUNICATIONS

A. R. Ingraffea: Nodal Grafting for Crack Propagation Studies 1185

M. N. Bismarck-Nasr: Finite Element Method Applied to the Flutter of Two Parallel Elastically Coupled Flat Plates 1188

H. Pircher and G. Beer: On the Treatment of 'Infinite' Boundaries in the Finite Element Method 1194

BOOK REVIEWS 1198

CALL FOR PAPERS 1199

CONTENTS

Issue No. 8, 1977

Erratum: Note on Frontal Solution Program for Unsymmetric Matrices by P. Hood 1202

W. C. Carpenter and E. A. Smith: Computational Efficiency of Non-linear Programming Methods on a Class of Structural Problems 1203

D. M. Tracey and T. S. Cook: Analysis of Power Type Singularities using Finite Elements 1225

B-C. Wang and R. Luus: Optimization of Non-unimodal Systems 1235

S. K. Gupta and K. K. Tanji: Computer Program for Solution of Large, Sparse, Unsymmetric Systems of Linear Equations 1251

D. Hitchings and P. Ward: The Steady State Response of Geometrically Non-linear Shallow Arches 1261

P. Bettess and O. C. Zienkiewicz: Diffraction and Refraction of Surface Waves Using Finite and Infinite Elements 1271

H. D. Kraus: A Hybrid Stiffness Matrix for Orthotropic Sandwich Plates with Thick Faces 1291

P. B. Johns: A Simple Explicit and Unconditionally Stable Numerical Routine for the Solution of the Diffusion Equation 1307

SHORT COMMUNICATIONS

J. H. Wergeland: Temperature Load on Thick Curved Shell Elements 1329

R. D. Cook: More About 'Artificial' Softening of Finite Elements 1334

G. de Mey: A Simplified Integral Equation Method for the Calculation of the Eigenvalues of Helmholtz Equation 1340

LETTER TO THE EDITOR 1343

BOOK REVIEW 1343

ANNOUNCEMENT & CALL FOR PAPERS 1344

CONTENTS

Issue No. 9, 1977

D. J. Dawe: Static Analysis of Diaphragm-supported Cylindrical Shells Using a Curved Finite Strip 1347

E. Z. Tatsa and M. Levy: Eccentrically Loaded Sandwich Panels 1365

N. S. Das, N. R. Chitkara and I. F. Collins: The Computation of Some Slipline Field Solutions for Asymmetric Extrusion 1379

W. L. Kwok, Y. K. Cheung and C. Delcourt: Application of Least Square Collocation Technique in Finite Element and Finite Strip Formulation 1391

J. C. Cavendish, W. J. Gordon and C. A. Hall: Substructured Macro Elements Based on Locally Blended Interpolation 1405

J. G. Cameron and C. S. Pemberton: A Theoretical Study of Thermal Stress Relief in Thin Shells of Revolution 1423

T. Saitoh: A Numerical Method for Two-dimensional Navier–Stokes Equation by Multi-point Finite Differences 1439

G. Jeng and A. Wexler: Isoparametric, Finite Element, Variational Solution of Integral Equations for Three-dimensional Fields 1455

SHORT COMMUNICATIONS

A. K. Gupta and P. S. Ma: Error in Eccentric Beam Formulation 1473

D. F. Griffiths: On the Approximation of Convection Problems in Fluid Dynamics 1478

LETTER TO THE EDITOR 1484

BOOK REVIEWS 1485

CONTENTS

Issue No. 10, 1977

G. Sander and P. Beckers: The Influence of the Choice of Connectors in the Finite Element Method 1491

K. P. Oh and S. M. Rohde: Numerical Solution of the Point Contact Problem Using the Finite Element Method 1507

W. L. Wood: On the Zienkiewicz Four-time-level Scheme for the Numerical Integration of Vibration Problems 1519

T. J. R. Hughes, R. L. Taylor and W. Kanoknukulchai: A Simple and Efficient Finite Element for Plate Bending 1529

O. C. Zienkiewicz, J. Bauer, K. Morgan and E. Onate: A Simple and Efficient Element for Axisymmetric Shells 1545

H. Hashimoto and K. Washizu: Application of the Finite Element Technique Combined with the Collocation Method to Low Supersonic Lifting Surface Problems 1559

D. M. Trujillo: An Unconditionally Stable Explicit Algorithm for Structural Dynamics 1579

H. A. Mang: Derivation of General Algebraic Constraint Conditions for 'Weak' C^1 Continuity for Thin shells 1593

S. D. Williams and D. M. Curry: An Implicit-iterative Solution of the Heat Conduction Equation with a Radiation Boundary Condition 1605

SHORT COMMUNICATIONS

W. Allan: Newtonian Die Swell Evaluation for Axisymmetric Tube Exits Using a Finite Element Method 1621

J. Reinkenhof: Differentiation and Integration Using Bernstein's Polynomials . . 1627

R. D. Cook: Discussion of a Paper by B. M. R. Irons and T. K. Hellen 1631

ANNOUNCEMENT 1632

CONTENTS

Issue No. 11, 1977

Y. Yamada and Y. Ezawa: On Curved Finite Elements for the Analysis of Circular Arches 1635

W. H. Frey: Flexible Finite-difference Stencils from Isoparametric Finite Elements 1653

A. K. Runchal: Comparative Criteria for Finite-difference Formulations for Problems of Fluid Flow 1667

A. K. Chugh: Stiffness Matrix for a Beam Element Including Transverse Shear and Axial Force Effects 1681

M. L. Gambhir and B. de V. Batchelor: A Finite Element for 3-D Prestressed Cablenets 1699

M. M. Aral and Ü. Gülçat: A Finite Element Laplace Transform Solution Technique for the Wave Equation 1719

B. Tabarrok and A. Simpson: An Equilibrium Finite Element Model for Buckling Analysis of Plates 1733

F. J. Rizzo and D. J. Shippy: An Advanced Boundary Integral Equation Method for Three-dimensional Thermoelasticity 1753

SHORT COMMUNICATION

I. Hirai and M. Kashiwaki: Derivatives of Eigenvectors of Locally Modified Structures 1769

LETTER TO THE EDITOR 1774

BOOK REVIEW 1774

ANNOUNCEMENTS 1775

CONTENTS

Issue No. 12, 1977

Erratum: 1778

J. A. Bettess: A Data Structure for Finite Element Analysis 1779

R. H. T. Bates and M. O. Milner: Lagrange Polynomials of a Complex Variable for Two-dimensional Interpolation 1801

K. E. Barrett: Finite Element Analysis for Flow Between Rotating Discs Using Exponentially Weighted Basis Functions 1809

J. R. Booker and J. C. Small: An Investigation of the Stability of Numerical Solutions of the Equations of Viscoelasticity 1819

J. C. Heinrich and O. C. Zienkiewicz: Quadratic Finite Element Schemes for Two-dimensional Convective-transport Problems 1831

K. Chandrashekhara and K. A. Jacob: An Experimental–Numerical Hybrid Technique for Three Dimensional Stress Analysis 1845

H. O. Kim and R. L. Kuhlemeyer: A Finite Element Formulation for Creep Analysis 1865

C. H. Cooke and D. K. Blanchard: A Block Iterative Finite Element Algorithm for Numerical Solution of the Steady-state, Compressible Navier–Stokes Equations . 1879

SHORT COMMUNICATIONS

J. E. Akin and W. H. Gray: Contouring on Isoparametric Surfaces 1893

BOOK REVIEWS 1898

ANNOUNCEMENTS 1899

Table of Contents, Volume 11 1903

Author Index 1915

AUTHOR INDEX, VOLUME 11

Abbas, B. A. H. and Thomas, J.: Static stability of plates using fully conforming element, 995

Akin, J. E.: Integration over the unit triangle, 386

——, and Gray, W. H.: Contouring on isoparametric surfaces, 1893

Aktas, Z. and Stetter, H. J.: A classification and survey of numerical methods for boundary value problems in ordinary differential equations, 771

Allan, W.: Newtonian die swell evaluation for axisymmetric tube exits using a finite element method, 1621

Ando, Y.: see Yagawa, G., 1107

Aral, M. M. and Gulcat, U.: A finite element Laplace transform solution technique for the wave equation, 1719

Arora, J. S.: see Feng, T-T., 39

Ashton, J. N.: see Dowson, D., 1005

Ayer, R. M.: see Wellford, L. C., 933

Baldur, R.: see Lague, G., 388

Bar-Itzhack, I. Y.: A unidimensional convergence test for matrix iterative processes applied to strapdown navigation, 115

Barnhill, R. R., Brown, J. H., McQueen, N., and Mitchell, A. R.: Computable finite element error bounds for Poisson's equation, 593.

Barrett, K. E.: Finite element analysis for flow between rotating discs using exponentially weighted basis functions, 1809

Barsoum, R. S.: Triangular quarter-point elements as elastic and perfectly-plastic crack tip elements, 85

——: Author's reply to the discussion by Tracey, 402

Batchelor, B. de V.: see Gambhir, M. L., 1699

Bates, R. H. T. and Milner, M. O.: Lagrange polynomials of a complex variable for two-dimensional interpolation, 1801

Batra, R. C.: Cold sheet rolling, the thermoviscoelastic problem, a numerical solution, 671

Bauer, J.: see Zienkiewicz, O. C., 1545

Beckers, P.: see Sander, G., 1491

Beer, G.: see Pircher, H., 1194

Belytschko, T., Schwer, L. and Klein, M. J.: Large displacement, transient analysis of space frames, 65

Bettess, J. A.: A data structure for finite element analysis, 1779

Bettess, P.: Infinite elements, 53

——, and Zienkiewicz, O. C.: Diffraction and refraction of surface waves using finite and infinite elements, 1271

——: see Zienkiewicz, O. C., 355

Bismarck-Nasr, M. N.: Finite element method applied to the flutter of two parallel elastically coupled flat plates, 1188

Blackburn, W. S. and Hellen, T. K.: Calculation of stress intensity factors in three dimensions by finite element methods, 211 (see Erratum, 1058)

Blanchard, D. K.: see Cooke, C. H., 1879

Blount, G. N.: see Dowson, D., 1005

Booker, J. R. and Small, J. C.: An investigation of the stability of numerical solutions of the equations of visco-elasticity, 1819

Bourgat, J. F. and Duvaut, G.: Numerical analysis of flow with or without wake past a symmetric two-dimensional profile without incidence, 975

Bradley, W. A.: An alternate finite difference operator for plates of variable stiffness, 1044

Brameller, A.: see Li, P. M., 963

Brandt, K.: Calculation of vibration frequencies by a hybrid element method based on a generalized complementary energy principle, 231

Bromhead, E. N.: Discussion of 'Finite element residual schemes for unconfined flow' by Chandrakant S. Desai, 908

Brown, J. H.: see Barnhill, R. R., 593

Bushnell, D.: A strategy for the solution of problems involving large deflections, plasticity and creep, 683

Bykat, A.: A note on an element ordering scheme, 194

Cameron, J. G. and Pemberton, C. S.: A theoretical study of thermal stress relief in thin shells of revolution, 1423

Care, R. F., Lawther, R. E. and Kabaila, A. P.: Finite element post-buckling analysis for frames, 833

Carpenter, W. C., and Smith, E. A.: Computational efficiency of non-linear programming methods on a class of structural problems, 1203

Case, W. R., Jr., and Walston, W. H., Jr.: A finite element technique for non-deterministic thermal deformation analyses including temperature dependent material properties, 915

Cavendish, J. C., Gordon, W. J., and Hall, C. A.: Substructured macro elements based on locally blended interpolation, 1405
Cecchi, M. M., and Lami, C.: Automatic generation of stiffness matrices for finite element analysis, 396
Chandrashekhara, K., and Jacob, K. A.: An experimental–numerical hybrid technique for three dimensional stress analysis, 1845
Cheung, Y. K.: see Kwok, W. L., 1391
Chitkara, N. R.: see Das, N. S., 1379
Chugh, A. K.: Stiffness matrix for a beam element including transverse shear and axial force effects, 1681
Cichocki, A., and Osowski, S.: Analysis of active ladder network by using Coates flow graphs and continuants, 900
Cochet, J. F., and Dhatt, G. S.: A modification of the Alpha constant technique, 1053
Collins, I. F.: see Das, N. S., 1379
Collins, R. J.: A modified prefrontal routine, 765
Comini, G.: see Lewis, R. W., 1175
Contri, L., and Schrefler, B.: A stability investigation of cable suspended pipelines, 521
Cook, R. D.: Ways to improve the bending response of finite elements, 1029
——: More about 'artificial' softening of finite elements, 1334
——: Discussion of a Paper by B. M. R. Irons and T. K. Hellen, 1631
——, and Tantichaiboriboon, V.: Application of optimization and finite element methods to a cracking problem in timber, 756
Cook, T. S.: see Tracey, D. M., 1225
Cooke, C. H.: A block iterative **LU** solver for weakly coupled linear systems, 897
——, and Blanchard, D. K.: A block iterative finite element algorithm for numerical solution of the steady-state compressible Navier-Stokes equations, 1879
Crain, L. M.: see Stanton, E. L., 653
Curry, D. M.: see Williams, S. D., 1605

Das, N. S., Chitkara, N. R., and Collins, I. F.: The computation of some slipline field solutions for asymmetric extrusion, 1379
Davies, B., and Hendry, J. A.: The indirect design of fluid channels using a global variational method with trial functions not satisfying the prescribed boundary conditions, 579
Dawe, D. J.: Static analysis of diaphragm-supported cylindrical shells using a curved finite strip, 1347
Deeley, E. M., and Okon, E. E.: A numerical method of solving Fredholm integral equations applied to current distribution and inductance in parallel conductors, 447
Delcourt, C.: see Kwok, W. L., 1391
Desai, C. S.: Author's reply to the discussion by Bromhead, 910
Deshpande, M. D., and Giddens, D. P.: Direct solution of two linear systems of equations forming coupled tridiagonal-type matrices, 1049
Dhatt, G. S.: see Cochet, J. F., 1053
Dong, S. B.: A Block-Stodola eigensolution technique for large algebraic systems with non-symmetrical matrices, 247
Dowson, D., Blount, G. N., and Ashton, J. N.: Optimization methods applied to hydrodynamic bearing design, 1005
Duvaut, G.: see Bourgat, J. F., 975

Eason, E. D., and Mote, C. D., Jr.: Solution of non-linear boundary value problems by discrete least squares, 641
Edwards, A. L.: see Narasimhan, T. N., 325
Ezawa, Y.: see Yamada, Y., 1635

Farshi, B.: see Schmit, L. A., Jr., 623
Felippa, C. A.: Error analysis of penalty function techniques for constraint definition in linear algebraic systems, 709
Feng, T-T., Arora, J. S., and Haug, Jr., E. J.: Optimal structural design under dynamic loads, 39
Foster, K.: see O'Carroll, M. J., 439
Frey, W. H.: Flexible finite-difference stencils from isoparametric finite elements, 1653
Friedmann, P., Hammond, C. E., and Woo, T.-H.: Efficient numerical treatment of periodic systems with application to stability problems, 1117
Frind, E. O.: An isoparametric Hermitian element for the solution of field problems, 945

Gallagher, R. H.: see Mang, H. A., 145
Gambhir, M. L., and Batchelor, B. de V.: A finite element for 3-D prestressed cablenets, 1699
Gartling, D. K., Nickell, R. E., and Tanner, R. I.: A finite element convergence study for accelerating flow problems, 1155
Giddens, D. P.: see Deshpande, M. D., 1049
Gignac, D. A.: Solution of a complex quadratic eigenvalue problem, 99
Gluck, J.: see Kalev, I., 875
Gordon, W. J.: see Cavendish, J. C., 1405
Gray, W. H.: see Akin, J. E., 1893
Griffiths, D. F.: On the approximation of convection problems in fluid dynamics, 1478
Gulcat, U.: see Aral, M. M., 1719
Gupta, A. K., and Ma, P. S.: Error in eccentric beam formulation, 1473

Gupta, S. K., and Tanji, K. K.: Computer program for solution of large, sparse, unsymmetric systems of linear equations, 1251

Haisler, W. E., Stricklin, J. A., and Key, J. E.: Displacement incrementation in non-linear structural analysis by the self-correcting method, 3
——: see Stricklin, J. A., 1041
Hall, C. A.: see Cavendish, J. C.: 1405
Hammond, C. E.: see Friedmann, P., 1117
Harley, P. J., and Mitchell, A. R.: A finite element collocation method for the exact control of a parabolic problem, 345
Hashimoto, H., and Washizu, K.: Application of the finite element technique combined with the collocation method of low supersonic lifting surface problems, 1559
Haug, E. J., Jr.: see Feng, T-T., 39
Heinrich, J. C., and Zienkiewicz, O. C.: Quadratic finite element schemes for two-dimensional convective-transport problems, 1831
——: see Zienkiewicz, O. C., 131
Hellen, T. K.: On special isoparametric elements for linear elastic fracture mechanics: a discussion of papers by R. D. Henshell, K. G. Shaw and R. S. Barsoum, 200
——: see Blackburn, W. S., 211 (and Erratum, 1058)
Hendry, J. A.: see Davies, B., 579
Hibbitt, H. D.: Some properties of singular isoparametric elements, 180
Hillion, P.: Numerical Integration on a triangle, 797
Hindi, K. S.: see Li, P. M., 963
Hinton, E.: The flexural analysis of laminated composites using a parabolic isoparametric plate bending element, 174
——, and Zienkiewicz, O. C.: A note on a simple thick finite strip, 905
Hirai, I., and Kashiwaki, M.: Derivatives of eigenvectors of locally modified structures, 1769
Hitchings, D., and Ward, P.: The steady state response of geometrically non-linear shallow arches, 1261 (see Erratum, 1778)
Ho, W. S.: see Stricklin, J. A., 1041
Hood, P.: Note on frontal solution program for unsymmetric matrices, 1202
Howson, W. P.: see Williams, F. W., 1067
Hughes, T. J. R.: A note on the stability of Newmark's algorithm in nonlinear structural dynamics, 383
——, Taylor, R. L., and Kanoknukulchai, W.: A simple and efficient finite element for plate bending, 1529
Huyakorn, P. S.: see Zienkiewicz, O. C., 131

Ingraffea, A. R.: Nodal grafting for crack propagation studies, 1185

Jacob, K. A.: see Chandrashekhara, K., 1845
Jeng, G., and Wexler, A.: Isoparametric, finite element, variational solution of integral equations for three-dimensional fields, 1455
Johns, P. B.: A simple explicit and unconditionally stable numerical routine for the solution of the diffusion equation, 1307
Jones, B.: A heuristic for root isolation, 598
Jordaan, I. J., and Khalifa, M. M. A.: Creep analysis of reinforced and prestressed concrete structures under non-uniform temperature distributions, using elastic solutions, 883

Kabaila, A. P.: see Care, R. F., 833
Kalev, I., and Gluck, J.: Elasto-plastic finite element analysis, 875
Kaneko, I.: A mathematical programming method for the inelastic analysis of reinforced concrete frames, 1137
Kanoknukulchai, W.: see Hughes, T. J. R., 1529
Kashiwaki, M.: see Hirai, I., 1769
Katnik, R.: A note on moment balance in the isoparametric shell element, 199
Katz, I. N.: Integration of triangular finite elements containing corrective rational functions, 107
Kaul, M. K.: Determination of eigenvalues of large structural systems in an arbitrarily specified range, 867
Kawahara, M.: Periodic Galerkin finite element method of unsteady periodic flow of viscous fluid, 1093
Kelly, D. W.: see Zienkiewicz, O. C., 355
Key, J. E.: see Haisler, W. E., 3
Khalifa, M. M. A.: see Jordaan, I. J., 883
Kim, H. O., and Kuhlemeyer, R. L.: A finite element formulation for creep analysis, 1865
Kleiber, M.: see Winnicki, L., 553
Klein, M. J.: see Belytschko, T., 65
Kraus, H. D.: A hybrid stiffness matrix for orthotropic sandwich plates with thick faces, 1291
Kuhlemeyer, R. L.: see Kim, H. O., 1865
Kulakowski, B.: see Willmott, A. J., 533
Kwieciński, M.: see Winnicki, L., 553
Kwok, W. L., Cheung, Y. K., and Delcourt, C.: Application of least square collocation technique in finite element and finite strip formulation, 1391

Lague, G., and Baldur, R.: Extended numerical method for triangular surfaces, 388
Lami, C.: see Cecchi, M. M., 396
Lawther, R. E.: see Care, R. F., 833
Levy, M.: see Tatsa, E. Z., 1365

Lewis, R. W., Strada, M., and Comini, G.: Drying-induced stresses in porous bodies, 1175
Li, P. M., Hindi, S., and Brameller, A.: Security assessment of gas networks, 963
Light, M. F., and Luxmore, A. R.: Application of the front solution to two and three-dimensional elastoplastic crack problems, 393
Lopez, L. A.: FINITE: An approach to structural mechanics systems, 851
Luus, R.: see Wang, B. C., 1235
Luxmoore, A. R.: see Light, M. F., 393

Ma, P. S.: see Gupta, A. K., 1473
Mang, H. A., and Gallagher, R. H.: A critical assessment of the simplified hybrid displacement method, 145
——: Derivation of general algebraic constraint conditions for 'weak' C^1 continuity for thin shells, 1593
Marcal, P. V.: see Melosh, R. J., 1083
Martins, R. A. F., and Owen, D. R. J.: Structural instability and natural vibration analysis of thin arbitrary shells by use of the semiloof element, 481
Mathers, M. D.: see Noor, A. K., 289
McAulay, A. D.: The finite element solution of dissipative electromagnetic surface waveguides, 11
McKay, C. M.: see O'Carroll, M. J., 439
McQueen, N.: see Barnhill, R. R., 593
Mehta, A. K.: see Rossow, M. P., 753
Melosh, R. J., and Marcal, P. V.: An energy basis for mesh refinement of structural continua, 1083
Mey, de G.: A simplified integral equation method for the calculation of the eigenvalues of Helmholtz equation, 1340
Meyer, G. H.: An alternating direction method for multi-dimensional parabolic free surface problems, 741
Milner, M. O.: see Bates, R. H. T., 1801
Mitchell, A. R.: see Zienkiewicz, O. C., 131
——: see Harley, P. J., 345
——: see Barnhill, R. R., 593
Miyazaki, M.: see Yagawa, G., 1107
Mondkar, D. P., and Powell, G. H.: Finite element analysis of non-linear static and dynamic response, 499
Morgan, K.: see Zienkiewicz, O. C., 1545
Mote, C. D., Jr.: see Eason, E. D., 641
Muthiyalu, N.: see Rao, G. V., 185

Narasimhan, T. N., Neuman, S. P., and Edwards, A. L.: Mixed explicit-implicit iterative finite element scheme for diffusion-type problems: II. Solution strategy and examples, 325
——: see Neuman, S. P., 309
Neu, T. F.: see Stanton, E. L., 653
Neuman, S. P., and Narasimhan, T. N.: Mixed explicit-implicit iterative finite element scheme for diffusion-type problems: I. Theory, 309
——: see Narasimhan, T. N., 325
Nickell, R. E.: see Gartling, D. K., 1155
Noor, A. K., and Mathers, M. D.: Finite element analysis of anisotropic plates, 289

O'Carroll, M. J., Foster, K., and McKay, C. M.: An attenuation-free upwind difference formula for analogue computation of charge flow in semiconductors, 439
Oh, K. P., and Rohde, S. M.: Numerical solution of the point contact problem using the finite element method, 1507
Okon, E. E.: see Deeley, E. M., 447
Onate, E.: see Zienkiewicz, O. C., 1545
Osowski, S.: see Cichocki, A., 900
Owen, D. R. J.: see Martins, R. A. F., 481

Pedersen, P.: On computer-aided analytic element analysis and the similarities of tetrahedron elements, 611
Pemberton, C. S.: see Cameron, J. G., 1423
Petruska, G.: see Rossow, M. P., 753
Pircher, H., and Beer, G.: On the treatment of 'infinite' boundaries in the finite element method, 1194
Powell, G. H.: see Mondkar, D. P., 499
Prakash, A.: Finite element solution of the non-self-adjoint convective-dispersion equation, 269
Prosperetti, A.: A numerical method for the solution of certain classes of nonlinear Volterra integro-differential and integral equations, 431

Radziuk, J.: The numerical solution from measurement data of linear integral equations of the first kind, 729
Raju, K. K.: see Rao, G. V., 185
Rao, G. V., Raju, K. K., Muthiyalu, N., and Venkataramana, J.: Least square and Galerkin finite element solution of flow past a flat plate, 185
Reinkenhof, J.: Differentiation and integration using Bernstein's polynomials, 1627
Richardson, E. Q.: see Stricklin, J. A., 1041
Rizzo, F. J., and Shippy, D. J.: An advanced boundary integral equation method for three-dimensional thermoelasticity, 1753
Rohde, S. M.: see Oh, K. P., 1507
Rossow, M. P., Mehta, A. K., and Petruska, G.: First Cesaro sums for high order finite elements near singularities, 753

Runchal, A. K.: Comparative criteria for finite-difference formulations for problems of fluid flow, 1667

Saitoh, T.: A numerical method for two-dimensional Navier–Stokes equation by multi-point finite differences, 1439
Sander, G., and Beckers, P.: The influence of the choice of connectors in the finite element method, 1491
Schmit, L. A., Jr., and Farshi, B.: Optimum design of laminated fibre composite plates, 623
Schrefler, B.: see Contri, L., 521
Schwer, L.: see Belytschko, T., 65
Shippy, D. J.: see Rizzo, F. J., 1753
Simpson, A.: see Tabarrok, B., 1733
Small, J. C.: see Booker, J. R., 1819
Smith, E. A.: see Carpenter, W. C., 1203
Son, N. Q.: On the elastic plastic initial-boundary value problem and its numerical integration, 817
Stanton, E. L., Crain, L. M., and Neu, T. F.: A parametric cubic modelling system for general solids of composite material, 653
Stetter, H. J.: see Aktas, Z., 771
Strada, M.: see Lewis, R. W., 1175
Strang, G.: A homework exercise in finite elements, 411
Stricklin, J. A., Ho, W. S., Richardson, E. Q., and Haisler, W. E.: On isoparametric *vs* linear strain triangular elements, 1041
——: see Haisler, W. E., 3

Tabarrok, B., and Simpson, A.: An equilibrium finite element model for buckling analysis of plates, 1733
Tanji, K. K.: see Gupta, S. K., 1251
Tanner, R. I.: see Gartling, D. K., 1155
Tantichaiboriboon, V.: see Cook, R. D., 756
Tatsa, E. Z., and Levy, M.: Eccentrically loaded sandwich panels, 1365
Taylor, R. L.: see Hughes, T. J. R., 1529
Thomas, J.: see Abbas, B. A. H., 995
Tong, Pin: Simplex elements of C^0 continuity with varying polynomial degrees, 27
——: A hybrid crack element for rectilinear anisotropic material, 377
Townsend, P.: Technical Note: the application of computers to viscosity measurement in non-Newtonian fluids, 191
Tracey, D. M.: Discussion of 'on the use of isoparametric finite elements in linear fracture mechanics', by R. S. Barsoum, 401
——, and Cook, T. S.: Analysis of power type singularities using finite elements, 1225
Trujillo, D. M.: An unconditionally stable explicit algorithm for structural dynamics, 1579
Tsipouras, P.: Compact representation of triangular finite elements for Poisson's equation, 419

Ury, J. F.: Numerical Fourier analysis in the range of higher frequencies, 469
Usuki, S.: The application of a variational finite element method to problems in fluid dynamics, 563

Venkataramana, J.: see Rao, G. V., 185

Wagner, R.: On local trial functions in the line solution technique of plane elasticity problems, 169
Walston, W. H., Jr.: see Case, W. R., Jr., 915
Wang, B-C., and Luus, R.: Optimization of non-unimodal systems, 1235
Ward, P.: see Hitchings, D., 1261 (see Erratum, 1778)
Washizu, K.: see Hashimoto, H., 1559
Wellford, L. C., Jr., and Ayer, R. M.: A finite element free boundary formulation for the problem of multiphase heat conduction, 933
Wergeland, J. H.: Temperature load on thick curved shell elements, 1329
Wexler, A.: see Jeng, G., 1455
Whiston, G. S.: On an eigensystem routine due to K. K. Gupta, 759
Williams, F. W., and Howson, W. P.: Compact computation of natural frequencies and buckling loads for plane frames, 1067
Williams, S. D., and Curry, D. M.: An implicit-iterative solution of the heat conduction equation with a radiation boundary condition, 1605
Willmott, A. J., and Kulakowski, B.: Numerical acceleration of thermal regenerator simulations, 533
Winnicki, L., Kwieciński, M., and Kleiber, M.: Numerical limit analysis of perforated plates, 553
Woo, T-H.: see Friedmann, P., 1117
Wood, W. L.: Control of Crank–Nicolson noise in the numerical solution of the heat conduction equation, 1059
——: On the Zienkiewicz four-time-level scheme for the numerical integration of vibration problems, 1519

Yagawa, G., Miyazaki, M., and Ando, Y.: Superposition method of finite element and analytical solutions for transient creep analysis, 1107
Yamada, Y., and Ezawa, Y.: On curved finite elements for the analysis of circular arches, 1635

Zienkiewicz, O. C., Heinrich, J. C., Huyakorn, P. S., and Mitchell, A. R.: An 'upwind' finite element scheme for two-dimensional convective transport equation, 131
——, Kelly, D. W., and Bettess, P.: The coupling of the finite element method and boundary solution procedures, 355
——, Bauer, J., Morgan, K., and Onate, E.: A simple and efficient element for axisymmetric shells, 1545
——: see Hinton, E., 905
——: see Bettess, P., 1271
——: see Heinrich, J. C., 1831